

STATE OF WISCONSIN : CIRCUIT COURT : MILWAUKEE COUNTY

DALE W. BRANDT as Personal  
Representative of the  
Estate of GLEN W. BRANDT,

Plaintiff,

vs.

Case No. 605-147

OWENS-ILLINOIS, INC., et al.,

Defendants.

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DEPOSITION OF DOHRMAN H. BYERS, taken by defendant  
Owens-Illinois, Inc., on Monday, October 21, 1985, commencing  
at 2:00 P. M., at Room 514, Sheraton Springdale, 11911  
Sheraton Lane, Springdale, Ohio 45246, pursuant to notice  
and the applicable Wisconsin Rules, before Carol R. Simpson,  
a Registered Professional Reporter and Notary Public within  
the State of Ohio.

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DOHRMAN H. BYERS

of lawful age, having been first duly sworn, was examined  
and testified as follows:

DIRECT EXAMINATION

BY MR. RILEY:

Q Would you state your full name for the record,  
please.

A Dohrman Harold Byers.

MR. RILEY: Let the record reflect that this  
is the deposition of Dohrman H. Byers, taken pursuant  
to notice and the applicable Wisconsin Rules.

Q Mr. Byers, my name is Bob Riley, and I'd like  
to, first of all, just explain to you that this is a deposi-  
tion and I will be asking you some questions, and everything  
that each of us says will be taken down by this court  
reporter. Because we have a court reporter transcribing  
everything that we say, it is very important that we take  
turns when we speak, that you let me finish my question before  
you begin your answer, otherwise the transcript will be a  
little bit difficult to read.

It is also important that you use words and  
speak out loud when you give an answer. If you shrug your  
shoulders or make a sound I might recognize as an answer,  
like Um-hmm, again, it will be very difficult for the court

1 reporter to take it down and it will be very difficult for  
2 us to understand your testimony once the deposition is  
3 transcribed.

4 If at any time you would like to take a break,  
5 just let us know and we will do so. In addition, if you  
6 don't understand any one of my questions, I would appreciate  
7 it if you would just let me know that and I'll try to do a  
8 better job of asking it so we can make sure that you under-  
9 stand the questions that you are answering.

10 Is all this all right with you?

11 A Fine.

12 Q Could you tell us your date of birth, please?

13 A July 18, 1914.

14 Q Your current address?

15 A 12060 Lawnview Avenue, Apartment 6,

16 Cincinnati, Ohio 45246.

17 Q You would agree with me that this deposition

18 is going forth at the Sheraton Hotel in Springdale, Ohio?

19 A I would.

20 Q Would you briefly describe your educational

21 background for us, please?

22 A I graduated from Mount Union College,

23 Alliance, Ohio, in 1936, with majors in Chemistry and

24 Mathematics; completed a Master of Science degree in 1938

1 at Purdue University with a major in Analytical Chemistry,  
2 minors in Physical Chemistry and Metallurgical Engineering.

3 I taught-- did you say just education?

4 Q Just education for now.

5 A All right. I subsequently did some graduate  
6 work at the University of Michigan.

7 Q In what area, sir?

8 A Chemistry.

9 Q In addition to the formal education which you  
10 have just described, have you from time to time attended  
11 continuing education programs in any field?

12 A Yes, a number in the field of industrial health.

13 Q What type of programs are you referring to?

14 A I have attended training courses in radio-  
15 logical health, and attended and participated in a number of  
16 seminars and training courses of a wide variety of subjects  
17 in industrial health.

18 Q I'm not going to ask you to name every one of  
19 them, but could you just identify some of the sponsors of  
20 those seminars and training courses?

21 A Well, the Public Health Service, U. S. Public  
22 Health Service in a number of cases; some by the University  
23 of Michigan; one by the University of Oklahoma. I find it  
24 difficult to recall others.

1 Q I think that will suffice. Have you authored  
2 any publications?

3 A Yes.

4 Q Could you tell us about what you have written,  
5 please?

6 A Well, I haven't checked recently, but as I  
7 recall I have something approaching sixty publications to my  
8 credit -- or discredit, as the case may be.

9 Q And in what general area are these publica-  
10 tions?

11 A Primarily in the chemical aspects of industrial  
12 health. I have some publications on chemical methods of  
13 analysis. I have publications in the area of ventilation  
14 design and control methods. Also some publications where I  
15 was a secondary author on toxicologics; also some field  
16 studies made by the Public Health Service which involved  
17 epidemiology, toxicology -- across the board. I was, in most  
18 cases in those publications my function was either the  
19 chemical analysis or the field sampling and engineering  
20 program.

21 Q You used a couple of terms I'd like you to  
22 explain for us. One is epidemiology. Could you explain very  
23 briefly what that is?

24 A Epidemiology is the study of the occurrence of

1 disease in various populations.

2 Q And how about toxicology?

3 A Toxicology is the study of the effects of  
4 chemicals or other agents on the human body, or on animals.

5 Q Have you received any awards in connection  
6 with your publications?

7 A Well, yes. Most recently in, I think it was  
8 November of 1980, myself and my co-author received an award  
9 for the best paper of the year on a paper on ventilation  
10 design. And that is the only award that I have received,  
11 strictly speaking, on the basis of publication. But I have  
12 received the Borden Award from the American Chemical Society.  
13 I have received a Meritorious Achievement Award from the  
14 American Conference of Governmental Industrial Hygienists.

15 I have been elected as a life honorary member  
16 of the American Industrial Hygiene Association, the American  
17 Conference of Governmental Industrial Hygienists, the Michigan  
18 Hygiene Society, and the American Public Health Association.

19 Q Now, you have mentioned a couple of organiza-  
20 tions, I was going to ask you if you belonged to any industry  
21 organizations or honorary organizations. I don't mean to ask  
22 you to repeat them all, but can you give us just an example  
23 of a few of them in the field of industrial health?

24 A Well, the Industrial Hygiene Association is the



1 industrial health association for non-medical personnel,  
2 although medical personnel do belong. But it is a profess-  
3 ional society in the area of industrial health and related  
4 activities.

5 Q How about the American Conference of Govern-  
6 mental and Industrial Hygienists?

7 A Yes, the American Conference of Governmental  
8 Industrial Hygienists is a similar parallel organization  
9 whose membership is restricted to industrial hygiene personnel  
10 of governmental agencies -- federal, state, county or city --  
11 or members of university faculties whose area is industrial  
12 health.

13 Q Now, if we refer to that organization as  
14 ACGIH, for short, you and I will understand we are talking  
15 about the American Congress of Governmental and Industrial--

16 A American Conference.

17 Q I'm sorry, American Conference of Governmental--

18 A Industrial Hygienists, yes.

19 Q That is the organization, okay?

20 A Right.

21 Q Okay. Have you spent your entire career in  
22 the field of industrial hygiene?

23 A Except for the three years when I taught at  
24 the-- not Michigan State University, Michigan State College,

1 then.

2 Q Okay. Would you summarize your work history  
3 for us, please?

4 A Well, in July, '41, I left Michigan State to  
5 accept a position with the U. S. Public Health Service,  
6 Division of Industrial Hygiene. I briefly worked in their  
7 analytical laboratories, and I was transferred to the engin--  
8 eering section and assigned to field duties.

9 Subsequently I was loaned to the State of New  
10 Jersey to aid in establishing an industrial health program  
11 in that state health department. Then I was loaned to the  
12 State of Massachusetts to provide assistance with the program  
13 conducted there by the state department of labor. From there  
14 I was sent to Montana to serve as director of industrial  
15 hygiene for the State of Montana for a bit better than three  
16 years.

17 I came back from Montana in late 1946 and was  
18 in the Division of Industrial Hygiene at Washington at that  
19 time, my duties being primarily working on various field  
20 investigations -- well, studies in industry and other places  
21 of various occupational health hazards.

22 I can't think of the exact date, but subse-  
23 quently-- yes, I can, too, 1948, I was made chief of the  
24 analytical chemistry services for the Division of Industrial

1 Hygiene, and continued in that position with some variations --  
2 at one time I was also assistant chief of the toxicology  
3 section, and then I wore an extra hat as chief of the training  
4 section which was devoted to providing training courses for  
5 industrial hygiene personnel primarily of state and local  
6 health agencies, although occasionally other individuals  
7 would be admitted.

8 Then I sort of climbed the ladder, moving up  
9 to become chief of the new activity, the Industrial Health  
10 Information Service, at which time I left the analytical  
11 laboratory "hat."

12 Q All right. Now, so how long did you hold that  
13 position as chief of analytical chemistry services?

14 A Oh, from 1948 to about 1959.

15 Q All right. Now, you were referring to the  
16 Industrial Health Information Services, am I right?

17 A Yes, actually we called it the Technical  
18 Information Section.

19 Q Okay. How long were you involved in that  
20 service?

21 A I actually headed that activity up until 1969,  
22 however in the interim I became chief of the training branch,  
23 which included the technical information service, and then  
24 moved from that into being the associate division chief and

1 the director of the Cincinnati operation.

2 Q Now, was there another change in 1969?

3 A Yes, I retired from the Public Health Service  
4 and took a position on the faculty at the University of  
5 Michigan in the School of Public Health, teaching in the  
6 industrial health area.

7 Q At any time did you obtain a Ph. D.?

8 A No, I did not.

9 Q But you were made a faculty member at the  
10 University of Michigan despite that?

11 A Right.

12 Q Was that an unusual occurrence?

13 A Yes, it was.

14 Q Was that accommodation made in light of your  
15 vast experience in the field?

16 A It was made on the basis of my experience, yes.

17 Q How long did you teach public health at the  
18 University of Michigan?

19 A I retired from the University of Michigan on  
20 July 1, 1981; however, the last year was a Sabbatical year --  
21 actually they called it a retirement furlough. I was on pay  
22 but I had no obligations of work.

23 Q When did you first become affiliated with the  
24 ACGIH?

1           A       Well, I attended a meeting of the ACGIH, I  
2 believe, in 1942 or thereabouts, but I don't believe I became  
3 a member until about 1948 -- give or take a year there.

4           Q       This was while you were employed by the United  
5 States Public Health Service?

6           A       Correct.

7           Q       Did you serve on any committees of the ACGIH?

8           A       I served on a number of committees over the  
9 years.

10          Q       Could you describe them for us, please, in  
11 chronological order?

12          A       No, I can't.

13          Q       All right. Can you give us a general idea of  
14 the types of committees that you have served on?

15          A       Well, I served on the Reorganizational  
16 Committee at one time. I served on the Threshold Limits  
17 Committee. I served various times on the Nominating Committee.  
18 I served on the Analytical Chemistry Committee. I served on  
19 the Noise Committee. I just can't recall what others.

20          Q       Okay. Let's talk about the Threshold Limits  
21 Committee. What was the-- first of all, can you tell us when  
22 you were a member of the Threshold Limits Committee?

23          A       Some time in the early 1950s, I'm not sure of  
24 that.

1 Q You're sure you were a member but you're just  
2 not sure of the dates?

3 A I'm not sure of the exact dates.

4 Q Can you tell us what the Threshold Limits  
5 Committee did?

6 A In detail, or --?

7 Q In general.

8 A Well, the Threshold Limits Committee met  
9 periodically to examine data on the toxicity and epidemiology  
10 and other aspects of the effects of occupational health  
11 hazards, chemical and otherwise. And on the basis of these,  
12 to establish a recommended guideline of permissible levels  
13 of exposure which they called the threshold limit values.  
14 These were predicated on the idea that this level of exposure  
15 would be safe for eight hours per day daily for the normal  
16 working individual.

17 Now, a safety factor was incorporated into  
18 these. Do you want more?

19 Q Well, if you're finished I'll go to the next  
20 question. If you're not finished, go ahead and finish.

21 A Well, I could go on at great length about  
22 that.

23 Q Well, let me ask you some specific questions.  
24 Let's just back up a little bit.

1 Now, these threshold limits, were they also  
2 called threshold limit values?

3 A That's the term now. Originally they were  
4 called maximum allowable concentrations.

5 Q If we call them maximum allowable concentra-  
6 tions, or MACs, for the rest of this deposition, will you  
7 be clear what I am referring to?

8 A I'll be clear, but it's not the best  
9 terminology.

10 Q Okay. If you'll indulge me, if we can just  
11 call them maximum allowable concentrations I'll appreciate  
12 that. That is certainly what they were called at the  
13 beginning, wasn't it?

14 A That's right.

15 Q Okay. How was it that this committee of the  
16 ACGIH established these maximum allowable concentrations?

17 A Well, in order to protect the health of the  
18 workers you needed to have some idea of what safe conditions  
19 are, and inasmuch as most of the problems we were dealing  
20 with in the earlier days involved airborne concentrations of  
21 chemical substances, it was apparent that we needed some  
22 guidelines as to what amounts or concentraions of these sub-  
23 stances the workers could tolerate without significant  
24 injury.

1           Q           What kind of information did the committee  
2 use to determine what that safe level of exposure would be?

3           A           Well, just about anything we could get our  
4 hands on, but we used the technical literature, reports on  
5 research projects, reports on field studies. And we used  
6 epidemiological reports; we used toxicology reports; we used  
7 various reports of atmospheric measurements in plant. We  
8 also used input from experienced and knowledgeable individ-  
9 uals who had, let's say, more than usual frequency to  
10 encounter these particular substances, who had special exper-  
11 ience with these substances.

12          Q           You said there was a safety factor built into  
13 these maximum allowable concentrations. Could you please  
14 explain what that is?

15          A           All right. The-- well, the human, or any  
16 animal, do not all react the same; there is a range of  
17 actions, and it was desired to set a level which would protect  
18 practically everybody, recognizing that there are some hyper-  
19 susceptible individuals and there are occasionally individuals  
20 who have, let's say, reduced health capacity. With the data  
21 at hand we would try to arrive at a level which would appear  
22 to protect most individuals, by that I mean a very high  
23 percentage. And then, depending on the nature of the  
24 chemical, we would reduce the level for added safety to



1 compensate for any errors in judgment, to some extent, to  
2 compensate for some people being more susceptible than we  
3 expected, or in other words, just a safety factor.

4 And we would attempt to use at least a two-fold  
5 factor; in other words, if we thought twenty was a good,  
6 probably safe limit, we would recommend ten.

7 Q As an even lower level to be on the safe side?

8 A To be on the safe side. And in some materials  
9 which had exceptional toxicity or acted very rapidly, we would  
10 even cut it down by a factor of ten, or in some instances now  
11 where they even cut it down by a factor of a hundred or so,  
12 the idea being that the limit is not an exact figure because  
13 there cannot be any totally exact figure.

14 Q Now, when you were on the Threshold Limits  
15 Committee, was there a maximum allowable concentration recog-  
16 nized for asbestos?

17 A To the best of my knowledge, yes, there was.

18 Q What level was that?

19 A I believe it was five million particles per  
20 cubic foot.

21 Q Now, cubic foot of what?

22 A Of air.

23 Q All right. So you are measuring it as a dust,  
24 then?

1 A Measuring as an airborne dust.

2 Q Now, did that standard apply to just the  
3 asbestos that was in the air, or did that standard apply to  
4 all of the dust in the air, some unknown portion of which  
5 might be asbestos?

6 A The standard was set on the presumption of  
7 100 percent asbestos.

8 Q So it was a pure asbestos standard?

9 A Yes, that was the intent. But in actual  
10 practice, it was used-- if it was primarily asbestos, in other  
11 words, if it was 80 or 90 percent asbestos, they would use  
12 the same standard.

13 Q Now, if there were a mixed dust that had only  
14 a small portion of asbestos in it, how was the maximum allow-  
15 able concentration to be applied?

16 A In that case, if you knew the percentage of  
17 asbestos in the dust, and also assuming that the remaining  
18 dust was what we term nuisance dust, or non-toxic material,  
19 you could reduce the value by the percentage of asbestos.  
20 In other words, if only twenty percent asbestos, why,  
21 theoretically you could take that-- not reduce the value,  
22 raise it. If there is only twenty percent asbestos, you could  
23 say that you could have a limit of twenty-five.

24 Q All right. And that would be since only twenty

1 percent of the total dust was asbestos, and the five million  
2 particle standard basically dealt with a hundred percent,  
3 you could multiply your maximum allowable concentration by  
4 five for that particular mix of dust?

5 A That would be the presumption.

6 Q So depending on how much asbestos might be in  
7 this mixed dust, that maximum allowable concentration might  
8 vary for the mixed dust?

9 A You could establish a special concentration for  
10 the mixed dust, yes, with the upper limit being fifty million  
11 particles per cubic foot because that was, I believe at that  
12 time, 'way back, was the maximum permissible amount for even  
13 a nuisance dust.

14 Q Now, in applying these maximum allowable con-  
15 centrations, did the amount of time exposed have anything to  
16 do with applying the standard?

17 A Yes. These were what we call time weighted  
18 averages. In other words, the permissible exposure dose, as  
19 some term it, per day, would be your eight hours times the,  
20 say, five million parts per cubic foot or a product of 40 ppm  
21 hours -- that is particles per million cubic foot hours. And  
22 if you worked less than eight hours, let's say that you worked  
23 only four hours, theoretically the limit could be ten million  
24 particles per cubic foot for the four hours. That is provid-

1 ing you had no further exposure to that material during the  
2 rest of the day.

3 Q So in applying the maximum allowable concen-  
4 trations, even if the level of exposure at a particular  
5 location might be above that maximum allowable concentration,  
6 if it were for less than eight hours a day, then you might  
7 not have a situation where you have exceeded the maximum  
8 allowable concentration?

9 A Correct.

10 Q All right. Now, while you were on the Thresh-  
11 old Limit Committee, did the committee have a procedure  
12 whereby they would review these maximum allowable concentra-  
13 tions from time to time?

14 A That is part of the procedure, that any limit  
15 which is on the list is subject to review annually. By that  
16 I do not mean that a detailed study is made annually of each  
17 of the some 800 or so that are on it now, but that if for any  
18 reason -- either through a request from somebody or a new  
19 publication, new information, or even just a hunch by a  
20 committee member -- they felt that a particular value needed  
21 to be re-examined, they would undertake to do so, and if there  
22 was information to support it or if the reconsideration of the  
23 former data convinced them otherwise, they could adjust the  
24 limit.

1 It could be adjusted up or down; however in  
2 actual history of the fact it is very seldom where they ad-  
3 justed up. They were usually made more strict.

4 Q Now, in this process of evaluation of the  
5 maximum allowable concentrations, would that subject ever  
6 come up before the annual meeting of the ACGIH?

7 A I left that out. The committee, Threshold  
8 Limits Committee, made their annual report and recommendations  
9 to the association and at the annual business meeting this  
10 was approved or disapproved by vote of the membership present  
11 at that meeting. Occasionally a particular item would be  
12 stricken from the list because of objections raised. And this  
13 was not too frequent, but it did happen.

14 Q During the time that you were on the Threshold  
15 Limits Committee, did anybody ever raise a question as to the  
16 safety of the maximum allowable concentration for asbestos?

17 A To the best of my knowledge, no.

18 Q I take it from approximately 1942 until, well,  
19 even perhaps presently, you have been attending annual meet-  
20 ings of the ACGIH?

21 A Yes, I have attended most of them up until  
22 1981, anyway.

23 Q At any point in time was there on the agenda  
24 at the annual meeting a discussion of changing the maximum

1 allowable concentration for asbestos, at the annual meeting?

2 A Yes, that did come up, but I believe that it  
3 was in the late 1960s.

4 Q And did there come a time when the ACGIH  
5 actually changed its maximum allowable concentration for  
6 asbestos?

7 A Yes.

8 Q Can you tell us when, approximately, that was?

9 A Because of the final evidence of carcinogenic  
10 potential of asbestos, they made a change and as I have to  
11 say, I believe the change came in the late 1960s -- 1968,  
12 '69. I know that OSHA promulgated their first proposal on  
13 asbestos about 1972, if I recall correctly. It was not too  
14 long-- it was one of the early ones they put out.

15 Q When the ACGIH made this change in 1968 or  
16 '69, did it adjust the standard up or down; make it stricter  
17 or more--

18 A Oh, much more strict. I just offhand cannot  
19 recall what the first action was there, but they finally came  
20 down to the two fibers per cubic centimeter because asbestos  
21 is different from most mineral dust in that it is fibrous.  
22 The particles are long and thin rather than being like a  
23 granule, and so now they judge it on the basis of fibers per  
24 cubic centimeter. The two fibers per cubic centimeter would

1 be roughly 60,000 particles per cubic foot.

2 Q Now, going back to your work at the Public  
3 Health Service, you indicated as far as you went through your  
4 employment history that on certain occasions you were on loan  
5 to different states in connection with their state boards of  
6 health. Can you describe for me generally whether there was  
7 any ongoing relationship between the United States Public  
8 Health Service and the various state boards of public health?

9 A Oh, very close relationships, yes.

10 Q Could you explain that for us?

11 A Not always amicable, but close.

12 Well, oh, somewhere in the late 1930s, about  
13 1939 or perhaps a year or so before, under the Federal  
14 Security Agency -- this was during Roosevelt's second term --  
15 they, Congress appropriated earmarked funds or line item  
16 appropriations of money to foster or support the establish-  
17 ment of industrial hygiene activities in states, and this was  
18 under the Public Health Service. And so they had a states'  
19 relation program which was devoted to trying to encourage the  
20 states to develop programs.

21 This was-- I was part of that program and  
22 that was my purpose in being loaned to these various states,  
23 was to aid them in expanding or providing activity or  
24 services. The Public Health Service also gave them grants-

1 in-aid in the form of money which could be used for personnel  
2 and other expenses. They gave them a loan of technical  
3 equipment as well as loan of personnel, and they provided  
4 laboratory services and other advisory services to them.

5 Q And did you actually do that on behalf of the  
6 Public Health Service over a period of years?

7 A Yes.

8 Q You mentioned lab services. Can you describe  
9 what kind of lab services were provided to these state boards  
10 of health by the Public Health Service of the United States?

11 A The one I had the most connection with was  
12 the analytical laboratory services in that any state, city,  
13 county, industrial hygiene organization, could send us such  
14 samples as they wished and we would perform the chemical  
15 analysis and report back to them.

16 Q What would you tell them about the sample they  
17 sent in?

18 A Well, usually we just told them what was in  
19 it, and how much.

20 Q What kind of substances did the lab test?

21 A Oh, most of the samples were dust samples, but  
22 we also would analyze bulk materials. They'd send us a piece  
23 of ore or a piece of material, or chemical. We would analyze  
24 urine or blood. We analyzed other things such as on one



1 occasion they sent us some drinking glasses which had a  
2 design on them which we analyzed for the presence of lead.  
3 And other-- almost anything they wished to send us.

4 Q What was contained in some of the samples of  
5 dust that you received at the lab over the years, the kind  
6 of things where you analyzed them?

7 A Primarily the great bulk of them were  
8 analyzed for free silica, that is quartz and other forms of  
9 free silica, silicon dioxide. And we also analyzed for  
10 asbestos when it was requested. We would analyze for  
11 minerals and sometimes for organic chemicals in such dust.

12 Q Okay. What was your understanding of the  
13 purpose of determining what was contained in a dust sample?

14 A Well, most of the time it was because the,  
15 let's say the agency submitting it were investigating a  
16 particular industrial situation and they were attempting to  
17 determine the extent of the exposure, or to determine the  
18 exposure level, and sometimes to determine the identity of  
19 the material.

20 Q Now, did the maximum allowable concentrations  
21 have anything to do with that process?

22 A Not with our chemical analysis.

23 Q I mean the overall process--

24 A But the application of the information would

1 depend upon the threshold value limit, yes, or the MACs.

2 Q So was the analysis of the dust sample  
3 designed to help implement and apply the maximum allowable  
4 concentrations?

5 A Correct.

6 Q And is that something that you trained members  
7 of state boards of health to do all across the United States?

8 A Yes, we helped in that.

9 Q That was the standard way of going about the  
10 business of industrial hygiene in industrial settings?

11 A Right.

12 Q Mr. Byers, I'd like you to look at a one-page  
13 document, it has been previously marked in another deposi-  
14 tion as Detjen Exhibit 16, for identification. It purports  
15 to be a copy of a February 23, 1949 letter from D. H. Byers,  
16 Scientist, Laboratory Section, Division of Industrial Hygiene,  
17 addressed to Mr. William Z. Fluck, Industrial Hygiene Divi-  
18 sion, Wisconsin State Board of Health. Is that a true and  
19 correct copy of a letter that you wrote to Mr. Fluck on or  
20 about February 23, 1949?

21 A It would appear so.

22 Q Did you in the course of your career have any  
23 dealings with anybody who was employed at the Wisconsin  
24 State Board of Health?

1 A Yes.

2 Q Mr. Fluck is one of them?

3 A Mr. Fluck is one of them.

4 Q Can you name some others for us?

5 A Walter Poppe was a fellow I knew better. And  
6 Buzz Osterman, and that Buzz is his nickname, I can't tell  
7 you -- O s t e r m a n, I believe.

8 Q Can I refresh your recollection with  
9 Otterson?

10 A Otterson, correct.

11 Q All right. Did you know those gentlemen to  
12 be competent industrial hygienists?

13 A Yes, they were. Fluck and Poppe and Otterson  
14 were all very good men.

15 Q Now, this letter that you wrote to Mr. Fluck  
16 makes reference to "a sample of settled dust which you  
17 submitted with your letter of January 18, 1949." And I can  
18 tell you that I have not seen a copy of that document; to my  
19 knowledge it isn't any longer in existence. I don't know it,  
20 but looking at your response does that refresh your recollec-  
21 tion that Mr. Fluck sent a sample to you for analysis at the  
22 United States Public Health Service?

23 A I couldn't recall that specific instance,  
24 there being hundreds of them. But from the letter, I can

1 accept that.

2 Q Do you have any reason to doubt the authen-  
3 ticity of the letter?

4 A No, I have no reason to doubt the authenticity  
5 of the letter. It's my style, it's my name the way I was  
6 signing it then, and the laboratories were then located out  
7 in Bethesda at the National Institute of Health, and I was  
8 in charge of the Analytical Laboratory then.

9 Q Okay. Now, in this letter under field identi-  
10 fication it says, "Settled dust from cutting of K-LO," then  
11 under the column "Free Silica" it puts "13 Percent." What  
12 were you indicating when you said 13 percent there?

13 A Well, it would mean that the dust that was  
14 examined contained 13 percent of silica by weight.

15 Q And under "Asbestos" you have "See note" and  
16 an asterisk. And after the asterisk at the bottom it states,  
17 "There are a number of chemically different minerals which  
18 are included under the general classification of asbestos.  
19 To analyze for each of these would be a considerable task.  
20 Instead, a combined microscopic and chemical procedure has  
21 been used to approximate the asbestos content of the sample.  
22 There is more than 5 percent and probably less than 12 percent  
23 of asbestos in this sample. Chrysotile is by far the prin-  
24 cipal mineral in commercial grades of asbestos, but was not

1 significantly present in the sample."

2 Can you tell us what you are indicating about  
3 the asbestos content of the sample in that note?

4 A Well, as stated in there, there are a number  
5 of different minerals classified as asbestos or asbestoid  
6 minerals, chrysotile being the principal form of asbestos used  
7 in this country. There are amosite, crocidolite, and oh,  
8 serpentine, and I think all told about somewhere like seven  
9 or nine materials which generally are classified as asbestos.

10 This says that we examined it microscopically  
11 and by a chemical procedure. Asbestos are complicated sili-  
12 cate minerals. Free silica is crystalline silica dioxide.  
13 The asbestos mineral is the  $\text{SiO}_3$  silicate radical in there  
14 with at least two different mineral components, sometimes  
15 they have three, or I guess some of them even have four.

16 So, probably what we did here was examine that  
17 microscopically for fibrous materials and obtained a rough  
18 estimate there, and then analyzed it for silicate as versus  
19 the free silica. Now that can be done by treating it with a  
20 fluid boric acid which will gradually dissolve the free  
21 silica but not the silicate-- I beg your pardon, it's the  
22 other way around.

23 Q Then you report what percentage you believe is  
24 asbestos in this dust sample?

1 A That's right.

2 Q And you indicate that by a range of a 5  
3 percent-- more than 5 percent and probably less than 12 per-  
4 cent?

5 A Correct. These were the extremes of range.  
6 Asbestos is an extremely difficult material to analyze.

7 Q All right. Now I would like you to look at  
8 what has previously been marked as Detjen Exhibit 18 for  
9 identification, a two-page document the first page of which  
10 is an August 10, 1949 letter from William Z. Fluck to Mr.  
11 G. R. Mercer, Superintendent, Algoma Plywood and Veneer  
12 Company. Attached is a one-page dust survey bearing the date  
13 August 12, 1949.

14 Now, Mr. Byers, I realize that you are neither  
15 indicated as the author nor as the recipient of this letter,  
16 but I'd like to direct your attention to the third paragraph  
17 in the August 10th letter. It states: "It is difficult to  
18 set an accurate MAC (maximum allowable concentration) for the  
19 dust liberated into the air at your various K-LO processing  
20 machines. An analysis of dust from the dust collector was  
21 analyzed by the laboratory of the U. S. Public Health Service  
22 and was found to contain 13 percent free silica and 5 to 12  
23 percent asbestos. As both of these materials have about the  
24 same degree of toxicity, an MAC of 20 million would be

1 permissible assuming the dust breathed by the men to be the  
2 same as that caught in the dust collector."

3 My question for you, Mr. Byers, is: Is that  
4 the type of use of your dust analysis information which you  
5 expected to be made by the State Board of Health for Wisconsin?

6 A Yes, that's exactly the type of thing.

7 Q And is that use of that information and appli-  
8 cation of the information in forming a maximum allowable  
9 concentration consistent with what you understand to be the  
10 proper procedures to follow in industrial hygiene in 1949?

11 MR. GONRING: Object to the relevancy of the  
12 question.

13 MR. RILEY: Go ahead.

14 A Yes, I would say that that is in accordance  
15 with the accepted procedures; in fact, it's on the conserva-  
16 tive side.

17 Q And is that how you taught industrial  
18 hygienists around the United States to work with dust analy-  
19 sis information in setting maximum allowable concentrations?

20 MR. GONRING: Object to the relevancy of the  
21 question.

22 A Yes.

23 MR. RILEY: Thank you, Mr. Byers. I have  
24 nothing further.

## CROSS-EXAMINATION

BY MR. HARRINGTON:

Q Mr. Byers, during the time you were on the Threshold Limits Committee which set these safety standards for asbestos, did your committee publish its work or publish those limits in any form?

A Yes, well, let me straighten that out. I was not on the committee at the time the asbestos standard was set, and to the best of my recollection it did not come up for serious review during my time on the committee. However, the committee has published annually the threshold limit values in a publication. NIH puts out each year the most recent listing including, well, they include now a list of proposed changes; in the earlier days they didn't, but in later years they started, so that no change is made until there has been at least a one-year notice of intent to change. But the data has been published regularly since, if I am correct, about 1947.

Q So in your answer when you said, "I was not on the committee at the time the standard, the MAC for asbestos was set," you were referring to the fact that the MAC for asbestos was set before you joined the committee in the early Fifties, is that right?

A I believe so. To the best of my knowledge it



1 was set-- yes, it had to be set before then.

2 Q What kind of acceptance did the MAC, or MACs  
3 which were promulgated by the ACGIH receive in this country?

4 MR. GONRING: Object to the form of the  
5 question. Vague.

6 MR. RILEY: You can go ahead and answer.

7 Don't worry about the objections.

8 A All right. The ACGIH MACs were accepted as  
9 probably the most authoritative limits available for quite a  
10 number of years. I would say up until, well, let me back off.  
11 They are still highly accepted and widely accepted both here  
12 and in other countries. After the establishment of the  
13 Occupational Safety and Health Administration -- OSHA -- in  
14 1970, they made changes because they were establishing  
15 regulatory standards, but ACGIH continues to establish and  
16 publish their lists.

17 Q To your knowledge were MACs accepted by  
18 industry?

19 A In general, yes. They argued with some of  
20 them, but they were generally accepted.

21 Q Is that also true with the asbestos MAC?

22 A I believe so. The fact is I never heard  
23 questioning of the asbestos MAC probably until some time in  
24 the early or mid 1960s.

1           Q           You made reference to OSHA as a regulatory  
2 agency and you were juxtaposing that from, or as against the  
3 ACGIH and the, I think, U. S. Department of Public Health,  
4 and you were trying to draw a distinction there. What was  
5 that?

6           A           Well, there is considerable difference in the  
7 way they set their standards. You might say that initially  
8 OSHA adopted most, if not all, of the ACGIH T.L.V.s as their  
9 standards, with intent to promulgate their own standards,  
10 and then they went into it. But OSHA was setting regulatory  
11 standards whereas the ACGIH T.L.V.s are guidelines for  
12 professional application and judgment.

13          Q           Well, the ACGIH as I understand it, what  
14 you're saying to me, didn't have the authority to punish  
15 anyone?

16          A           The ACGIH used to -- I don't know whether  
17 they still do or not -- include in their preamble a statement  
18 that these were not intended to be adopted as regulatory  
19 values. They thought they were the best available guide-  
20 lines for professional practice to protect the health of the  
21 worker, but the establishment of these values as a regulation  
22 considerably takes away from the ability of the industrial  
23 hygienist to exercise professional judgment. I-- recognizing  
24 that in the regulatory agency if they are going to have to

1 bring punitive action, they need a regulation that says it  
2 is wrong to exceed this value, and they can act.

3 Q What I was getting to was the ACGIH was more  
4 in an educational role in terms of educating people toward  
5 potential hazardous substances in the work place?

6 MR. RILEY: Object to the form of the question.

7 MR. HARRINGTON: I'll withdraw that question.

8 THE WITNESS: Well--

9 MR. HARRINGTON: That's all right. I don't  
10 have any further questions.

11 CROSS-EXAMINATION

12 BY MR. HICKEY:

13 Q Do you know when the Federal Government  
14 initially passed any regulations concerning asbestos expos-  
15 ure for workers?

16 A I believe that was in 1972.

17 Q Would that have been the OSHA standard that  
18 you previously referred to?

19 A Correct.

20 Q Do you know whether prior to 1972 any individ-  
21 ual state passed any regulations or statutes concerning the  
22 exposure to asbestos by workers?

23 A I cannot tell you which state, but several  
24 states did include the ACGIH threshold limit values in a

1 legislation establishing them as the limits under that state  
2 authority.

3 The ACGIH-- shall I go on?

4 Q Would that have been prior to 1972?

5 A Probably, yes. Oh, definitely yes.

6 Q Do you know whether the State of Wisconsin  
7 prior to 1972 adopted the ACGIH guidelines in any type of  
8 statute or regulation concerning exposure of workers to  
9 asbestos?

10 A I don't know the answer to that, no.

11 Q You don't know the answer either way?

12 A No, I don't know whether-- I don't know  
13 whether they adopted it in any legislation or not. They  
14 adopted it in the practice of the individuals, the industrial  
15 hygienists there, but that is not necessarily legislative.

16 Q If I understand your testimony then, as you  
17 sit here this afternoon you don't know whether the State of  
18 Wisconsin adopted any mandatory regulations concerning  
19 workers' exposure to asbestos prior to the OSHA Act in 1972,  
20 is that correct?

21 A That's correct.

22 Q If I understood your testimony correctly,  
23 were the ACGIH guidelines for those states that did not  
24 implement them into one of their own laws, meant to be

1 recommendations as opposed to regulations?

2 A Yes, they were recommended guidelines and  
3 ACGIH really resisted having them enacted into legislation  
4 primarily because once they are enacted into legislation,  
5 they are set in concrete and no longer easily subject to the  
6 review or change which subsequent scientific information and  
7 industrial experience may indicate.

8 Q Prior to 1972 was the ACGIH a private group  
9 or was it part of the Federal Government?

10 A It never has been part of the Federal Govern-  
11 ment; it is a quasi governmental group. It is not estab-  
12 lished by any governmental agency. It is an organization of  
13 governmental employees in the area of industrial health.

14 Now, it was -- shall we say -- blessed by the  
15 Division of Industrial Hygiene in that they encouraged these  
16 activities and they encouraged those of us in the division  
17 to participate in the activities although it was not required  
18 of us.

19 Q Prior to 1972 the Division of Industrial  
20 Hygiene was a federal body, was it not?

21 A Well, it underwent a number of changes. It  
22 used to be the Division of Industrial Hygiene, and then at  
23 some point it became the Division of Occupational Health,  
24 then it became the Bureau of Occupational Safety and Health,

1 and then it became the National Institute of Occupational  
2 Safety and Health. So it's gone under different names, but  
3 it was basically the same organization, always a part of the  
4 U. S. Public Health Service.

5 Q And that was a creature created by the  
6 Federal Government?

7 A Correct.

8 Q Was OSHA, to your knowledge, also a creature  
9 created by the Federal Government?

10 A Yes, indeed.

11 Q You stated in response to one of Mr. Riley's  
12 questions that it was extremely difficult to measure asbestos.  
13 Do you recall that response?

14 A Yes.

15 Q What did you mean by that?

16 A As I stated, asbestos is a complicated  
17 silicate, metallic silicate mixture, and there are various  
18 types. The only way we had for analyzing for asbestos was  
19 to do an elemental analysis. I think chrysotile is an iron  
20 magnesium asbestos, I'm not sure on that point, but let's say  
21 we had iron magnesium silicate which would be an asbestos  
22 form. We had to analyze for iron, analyze for magnesium,  
23 analyze for the silica in there; then based on that, the  
24 proportions of those various elements, putting it together

1 to decide which form of asbestos it was. So it was not an  
2 easy task to do all those analyses. The material is extremely  
3 resistant to being broken down.

4 Q Was there some accepted protocol or laboratory  
5 procedure that was generally followed in analyzing a sample  
6 for the presence of asbestos?

7 A There were some procedures but none that I  
8 know of that were generally accepted.

9 MR. HICKEY: Thanks, that's all I have.

10 CROSS-EXAMINATION

11 BY MR. GONRING:

12 Q Mr. Byers, what years were you on the  
13 Threshold Limits Committee?

14 A The best I can say is some time in the early  
15 Fifties, for two or three years there.

16 Q And did I understand from your testimony the  
17 subject of the MAC for asbestos never came up for serious  
18 review during that time?

19 A That's right. By that I mean that it never  
20 came to the point where we made any special study of it.

21 Q And you, yourself, didn't have anything to do  
22 with the setting of five million as the MAC for asbestos?

23 A No, I did not have anything to do with setting  
24 that.

1 Q Did you ever at any time do any sort of study,  
2 or were you involved in any sort of study, other than the  
3 time you were on the Threshold Limit Committee, of what the  
4 maximum allowable concentration should be for asbestos?

5 A Let me ask for clarification, do you mean was  
6 I involved in any work in which asbestos exposure occurred,  
7 or was I involved in an investigation of asbestos?

8 Q I'm asking were you involved in any work or  
9 investigation where the subject was: what should the maximum  
10 allowable concentration be?

11 A No.

12 Q You told Mr. Riley that you weren't real  
13 comfortable with the phrase "maximum allowable concentration."  
14 Why is that?

15 A Well, we-- just because we changed the thresh-  
16 old limit values. It used to be maximum allowable, then  
17 maximum acceptable. We objected to the term "maximum." We  
18 put it as a guideline; we didn't want it as a maximum.

19 Q Why was that?

20 A That is because we felt for a short term  
21 exposure you could permit exposures above the value. In  
22 other words, the value was set on the basis of presumed eight  
23 hours continuous exposure per day, and if you were having less  
24 than that, then for short periods you could have something



1 above that limit as long as the time weighted average did not  
2 exceed the value for the day.

3 Q With all substances was that a directly  
4 proportional type of thing, this time weighted average?

5 MR. RILEY: Object to the form of the question.

6 It's a little vague and ambiguous. Go ahead.

7 A In general, yes, it applied; however good that  
8 was in highly toxic substances, you exercised great care in  
9 exceeding it.

10 Q Was it directly proportional in regard to  
11 asbestos?

12 A For asbestos -- we're talking about back in  
13 1949 -- it would have been considered proportional.

14 Q At some point to your knowledge did that  
15 change?

16 A Well, it changed whenever they came up to  
17 establish the new limit based on the carcinogenicity, and  
18 because of the carcinogenicity they don't worry about  
19 asbestosis. Prior to that, that five million parts per cubic  
20 foot was predicated on the basis of the fibrotic condition  
21 of the lung, asbestosis, which is far outweighed by the  
22 present knowledge.

23 Q When you were on the Threshold Limits Com-  
24 mittee did anyone from the asbestos industry ever provide

1 any information to your committee concerning exposure to  
2 asbestos?

3 MR. HARRINGTON: Object to the form of the  
4 question. It's vague with regard to who he means by  
5 the industry.

6 MR. RILEY: I object to the form of the  
7 question on the ground it's vague and ambiguous. You  
8 can go ahead and answer.

9 A Not during the time I was on the committee.  
10 Not that I know of.

11 Q Are you aware of any other time when such  
12 information was imparted to that committee?

13 MR. RILEY: Object to the question on the  
14 ground it lacks foundation.

15 A In the-- somewhere in that time in the 1960s  
16 there was information provided by asbestos industries, not--  
17 well, it was available to the ACGIH Threshold Limits  
18 Committee but it was provided to the Public Health Service  
19 who were then making an investigation of asbestos with regard  
20 to the new concept.

21 Q Do you remember what the nature of that  
22 information was in the 1960s?

23 A I don't know precisely the nature. My  
24 recollection is that it was what I would term epidemiologic

1 information on worker health problems in the asbestos  
2 industry, and also probably some information on exposure  
3 levels to asbestos.

4 Q Do you have a copy of that exhibit that Mr.  
5 Riley showed you?

6 MR. RILEY: Which one?

7 MR. GONRING: The relevant one, sixteen.

8 MR. RILEY: They're both relevant, but I'll  
9 give him sixteen.

10 MR. GONRING: I'm glad you caught that.

11 Q The procedure that you used to determine the  
12 percentage of asbestos in a dust sample you got from Mr.  
13 Fluck, was that the most accurate procedure that was avail-  
14 able to you in 1949?

15 A That was the best procedure that we knew of.

16 Q There was no procedure to come up with an  
17 exact percentage at that time?

18 A At that time there was no procedure with which  
19 we could analyze for an exact percentage.

20 Q Did you go about, in coming up with this per-  
21 centage that you related to Mr. Fluck, to determine all the  
22 different asbestos-type minerals that were in this sample?

23 A Since I don't recall the exact analysis, I  
24 have to go to memory of what we do. We analyzed it, as I

1 expressed, chemically, and then calculated it back to what  
2 asbestos that would be, and we calculated apparently on the  
3 basis of chrysotile which is the most common asbestos encoun-  
4 tered. That would be-- I'm having to make it, as I say, a  
5 somewhat educated guess.

6 Q Because it's so long ago?

7 A So long ago and I can't recall exactly.

8 Q Were you aware, when you did an analysis like  
9 this one in Exhibit 16, of the name of the company where the  
10 dust sample was taken?

11 A Usually not. Usually, most such samples were  
12 submitted to us simply from a state with a sample number.  
13 Sometimes they would give us additional information, but  
14 usually not.

15 Q Do you recall in this instance, Exhibit 16,  
16 being aware of the name of the company from which this dust  
17 sample was taken?

18 A No, I can't recall that. I would assume from  
19 my letter I probably did not know it.

20 Q So you have no knowledge whether you did  
21 further dust studies of the same company that we find that the  
22 dust samples were taken from in Exhibit 16?

23 A No, I don't.

24 Q Do you know whether the analysis that is

1 exhibited by Exhibit 16, the 5 to 12 percent, is a sample  
2 taken from one day?

3 A It states it is a settled dust sample, there-  
4 fore it was not collected from one day. A settled dust  
5 sample, we used to call them rafter dust samples because we  
6 would climb a ladder and take an envelope and a spatula and  
7 scrape some from a little of the crud on top and take some  
8 dust into the sample. Because the airborne material, the  
9 lighter stuff that is apt to be inhaled is what would get up  
10 on the rafters; that was our reason for sampling up there.  
11 It served as an elutriating process.

12 Q Back in 1949 would you have recommended that  
13 a company go through this process of having the dust analyzed  
14 periodically?

15 MR. RILEY: Object to the form of the question.

16 It's hypothetical, vague and ambiguous.

17 A If I understand your question correctly, yes,  
18 I would recommend a company have such analysis made.

19 Q How often would you recommend?

20 MR. RILEY: Same objection, hypothetical.

21 A Only if they changed materials. Once they had  
22 established the composition of the material they were using  
23 there would be no need for additional, but if they made any  
24 significant change in materials, then further analysis is

1 warranted.

2 Q When was the first time that you heard about  
3 this particular case?

4 A Other than the correspondence here, several  
5 months ago when Mr. Bunda, attorney from-- I believe asso-  
6 ciated with Mr. Riley, called me and asked to talk to me.

7 Q So it was a couple months ago, you say?

8 A Yes, several months ago.

9 Q And you talked at that time with this lawyer?

10 A Yes, I talked with Mr. Bunda on one occasion  
11 and then Mr. Riley on the second occasion.

12 Q When you talked to Mr. Bunda, that was over  
13 the phone?

14 A No, he came to my home and spent some time  
15 discussing the matter with me.

16 Q What did you talk about on that occasion?

17 A Well, he asked me questions much like what I  
18 have been asked today about my background and some of the  
19 questions very much like that concerning this letter, and  
20 that was about it.

21 Q And you met again then with Mr. Bunda and  
22 Mr. Riley?

23 A Right.

24 Q When was that?

1           A           I believe that was the middle of last month,  
2           if I recall correctly.

3           Q           Middle of September?

4           A           Well, it's been some time, four or five weeks  
5           ago.

6           Q           Was that at your home also?

7           A           No, that was here at the hotel.

8           Q           And what was discussed at that meeting?

9           A           We more or less went over the same ground with  
10          Mr. Riley, showing me these two letters and asking me  
11          questions pertaining to them, and asking if I would be will-  
12          ing to make a deposition in this case.

13          Q           That is the first time that your deposition  
14          was discussed, at that second meeting?

15          A           No, Mr. Bunda had spoken of it previously, too.

16          Q           Have you had any other conferences with Mr.  
17          Bunda or Mr. Riley concerning this deposition?

18          A           No, except to set up the time of the meeting.

19          Q           Did you meet with Mr. Riley today before your  
20          deposition?

21          A           We had lunch together, yes.

22          Q           Did Mr. Riley indicate to you at any of these  
23          meetings or did Mr. Bunda indicate to you what questions might  
24          be asked of you at this deposition?

1           A           Mr. Riley indicated to me at lunch the  
2           general nature of the deposition and indicated that he would  
3           ask questions much along the line he had asked on the  
4           previous occasion.

5           Q           Did Mr. Riley pick up your tab?

6           A           Yes, he did.

7           MR. GONRING: I have nothing further.

8           MR. RILEY: I've got a couple.

9           REDIRECT EXAMINATION

10          BY MR. RILEY:

11           Q           Did I suggest any answers to you, Mr. Byers?

12           A           No.

13           Q           I don't think Mr. Gonring meant to suggest  
14           this, but can anybody buy your testimony by buying your  
15           lunch?

16           A           No.

17           Q           I didn't think so.

18           A           They'd have to pay quite a bit more than that.  
19           It would have to be an awful lot.

20                        (General laughter.)

21           Q           Can you tell me when the maximum allowable  
22           concentration for asbestos was established by the ACGIH?

23           A           The original one?

24           Q           Yes.



1 A No, I can't tell you what year.

2 Q You would agree with me that it was in 1942  
3 or after you were a member of the ACGIH at the time?

4 A I would have been a member probably at the  
5 time because it would not have been established before 1947.

6 Q Okay. So, to the best of your recollection  
7 you were a member of the ACGIH at the time the MAC for  
8 asbestos was established?

9 A I was a member at the time, to the best of  
10 my recollection.

11 Q And you, like any other member, had the  
12 right to comment about those concentrations?

13 A Yes.

14 Q Did you raise any fuss at the time about the  
15 MAC being promulgated?

16 MR. GONRING: Are we talking about the MAC  
17 for asbestos?

18 A No, I had no reason to.

19 Q Did you have any reason to quarrel with the  
20 MAC for asbestos at any time prior to its change in 1968  
21 or 1969?

22 A No, on the basis of a limit to protect against  
23 asbestosis, the five million particles per cubic foot  
24 appeared to be a reasonable and acceptable limit.

1 MR. RILEY: Nothing further.

2 MR. HARRINGTON: Just a couple.

3 RECROSS EXAMINATION

4 BY MR. HARRINGTON:

5 Q You indicated that the MAC was predicated on  
6 knowledge of asbestosis at the time it was promulgated,  
7 right?

8 A That's correct.

9 Q To your knowledge or recollection, was that  
10 based on toxicological studies of any sort, or medical  
11 literature, or what?

12 A I believe it was based on some epidemiological  
13 work on asbestos in the textile industry.

14 Q Those were published articles, were they?

15 A Yes.

16 Q Available to anyone who cared to look them  
17 up?

18 A Um-hmm.

19 Q Your answer is yes?

20 A Yes, my answer is yes.

21 Q Now, you were asked by Mr. Gonring whether  
22 you would recommend that a company have studies periodically  
23 and I believe you answered yes, and then you said and there-  
24 after again only if you changed materials. That was your

1 testimony, correct?

2 A That's what I said.

3 Q If the company were to change its methods  
4 and procedures of handling certain dust creating materials,  
5 that would be another good reason to have a test, would it  
6 not?

7 A It might be it would be reason for re-  
8 evaluating the atmospheric concentrations to which the  
9 workers were exposed, because this might change. The  
10 process change might or might not affect the composition of  
11 the dust.

12 Q I may have misunderstood you. Was your prior  
13 answer based on the composition of the dust or the atmos-  
14 pheric concentrations?

15 A I understood that I was answering a question  
16 regarding analysis of the composition of the dust.

17 Q I misunderstood your prior testimony. So, in  
18 order to determine concentrations of dust in the air, that  
19 would require more frequent analysis?

20 A Yes. Any time there is a significant change  
21 in the process or work procedures, it is good practice to  
22 check the air concentrations to be sure that you haven't  
23 brought in a higher concentration.

24 Q The same thing would be true with changes in

1 ventilation systems?

2 A Yes.

3 MR. HARRINGTON: Thank you, sir.

4 MR. GONRING: I want to just put on the  
5 record that as to the deposition, we object to it  
6 as being untimely and outside of the scheduling  
7 order and deadline.

8 MR. RILEY: I want to put on the record  
9 that coming from the plaintiff I think that objection  
10 contravenes an agreement made between plaintiff's  
11 counsel and myself. I think it is inappropriate,  
12 but that's for another day.

13 MR. HARRINGTON: And I want to put on the  
14 record that those type of objections, according to  
15 the Rules, are supposed to be made before the  
16 deposition begins.

17 MR. RILEY: Mr. Byers, you have the  
18 right to review and sign this deposition transcript.  
19 The purpose of such review is to determine whether  
20 this professional court reporter has accurately  
21 transcribed your testimony. If you trust this  
22 professional court reporter to do so accurately, you  
23 may waive the right to review and sign the transcript.  
24 If you have some concern that the transcript may not

1 be a verbatim record of what you said, then you can  
2 reserve that right to sign and review the transcript.  
3 That is up to you, sir.

4 THE WITNESS: I have no desire to review it.

5 MR. RILEY: So you will waive signature?

6 THE WITNESS: I will.

7 MR. RILEY: Are all counsel willing to  
8 waive signature here?

9 MR. GONRING: Fine.

10 MR. HARRINGTON: So stipulated.

11 (Signature waived)

12 Dohrman H. Byers

13 (DEPOSITION CONCLUDED AT 3:20 P.M.)  
14

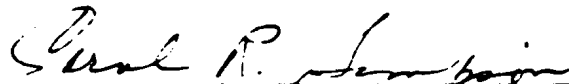
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C E R T I F I C A T E

STATE OF OHIO       )  
                              )   SS:  
COUNTY OF HAMILTON )

I, Carol R. Simpson, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within named DOHRMAN H. BYERS was by me first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the testimony given by him was reduced to stenotypy by me in the presence of said deponent, and thereafter transcribed into typewriting by me; that the foregoing is a true and correct transcript of the testimony given at said time and place by the deponent, that submission of the transcript to the deponent for examination and signature was waived; and that I am not counsel, attorney or relative of any of the parties to this cause and have no interest whatever in the result of this action.

IN WITNESS WHEREOF, I hereunto set my hand and official seal of office, at Cincinnati, Ohio, this 24th day of October, 1985.



Carol R. Simpson, RPR  
Notary Public for the State of Ohio  
My commission expires Jan. 15, 1989